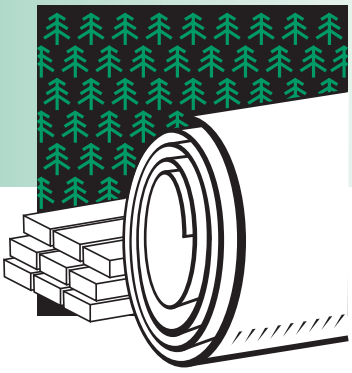
FOREST PRODUCTS

Success Story



REMOVAL OF BARK FROM WHOLE LOGS

Innovative Cradle Debarker™ Saves Trees, Increases Product Value, and Lowers Production Costs

Benefits

- Saves 33% in debarking energy requirements
- Increases wood value by inflicting less damage on logs during debarking so wood can be used for high-value economic products
- Increases process efficiency by giving debarking operator greater process control
- Saves trees by allowing a greater portion of the tree to be used
- Decreases transportation costs by eliminating the need for off-site debarking

Applications

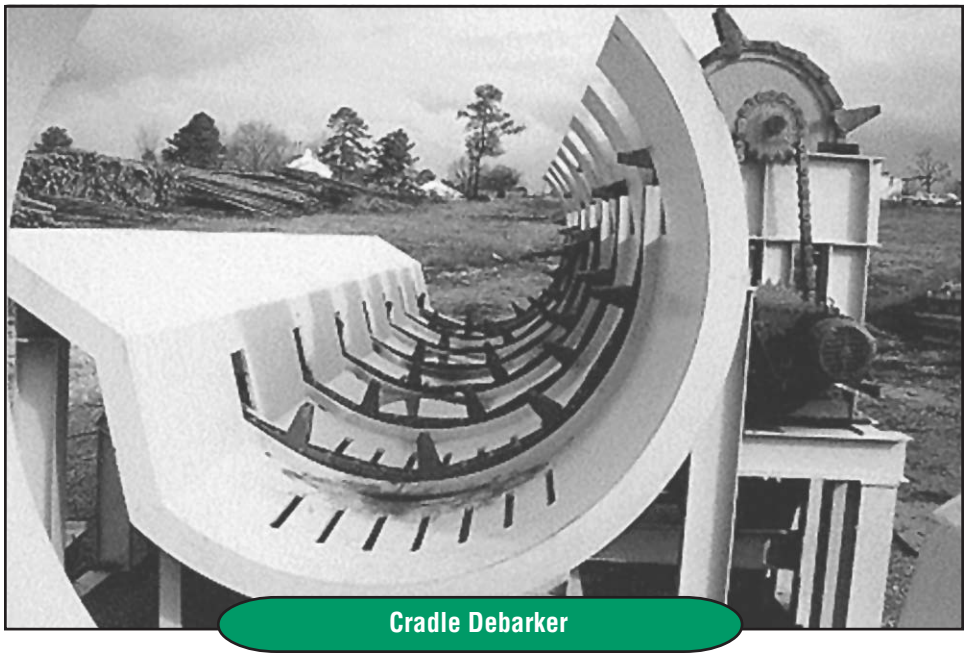
A new technology developed for the forest industry where almost 5,000 debarking units are used industry wide in the United States.

"The grant money received from DOE was instrumental in getting this invention commercialized. Not only was it a foundation to the success of this machine, it also enabled my company to successfully market all of the related products and machinery."

– Jeff Sasko
Inventor and President
Dieter Bryce, Inc.

The current trend in the wood and pulp industry is to debark and size the logs on the site of the lumbering operations, then ship the pulp chips and logs to their respective processing facilities off-site. A new technology called the Cradle Debarker reduces investment, operating, and maintenance costs over all other debarking methods today, while being used on-site.

With assistance from the U.S. Department of Energy's Inventions and Innovation Program, Dieter Bryce, Inc., developed the Cradle Debarker. This invention, with its patented design, removes bark from delimbed tree stems, which increases product value and lowers production cost over conventional debarking methods.



Cradle Debarker

OFFICE OF WEATHERIZATION AND INTERGOVERNMENTAL PROGRAM
ENERGY EFFICIENCY AND RENEWABLE ENERGY • U.S. DEPARTMENT OF ENERGY

Technology Description

As shown below, the stems are loaded into a long trough that contains a series of horizontal and vertical conveyor chains that move and raise the stems so they can be dropped back onto the stems remaining in the pile. The conveyor chains are oriented at a slight angle to the path of the logs so the logs move along the trough. The bark is loosened and removed because of the compressive and shear forces that result from the impact of the stems. Abrasion from moving the logs into position to drop onto the pile also contributes to the bark removal. Once the logs are debarked, they can be used for veneer, sawed into boards, or made into pulp chips.

A key feature of the Cradle Debarker is its open design. Unlike drum debarkers, which use a covered cylinder, the open top of this debarker lets the operator remove stems that have been debarked and recycle others that require further processing. By opening the top of the debarker, more of the tree being debarked can be used, saving trees. The open-top design also gives the debarking operator the opportunity to tailor the process to each species of tree being debarked, improving wood quality and increasing its use for high-value wood products.

Process Efficiency and Product Quality

Debarking logs with the Cradle Debarker will save trees, reduce production costs, and increase the economic value of wood products. Unlike current debarking methods that require logs to be debarked at a special facility and then shipped to sawmills for further processing, the Cradle Debarker can be used on-site saving time and transportations costs. By inflicting less damage on logs during the debarking process, the quality of the wood is increased so it can be used for higher-value products. Each Cradle Debarker saves approximately 15,000 tons of trees, or the equivalent of 87,976 pine trees per year. Cumulative savings through 2001 have surpassed 1,130,000 trees.

System Economics and Market Potential

This invention was developed for the forest industry where almost 5,000 debarking units are used industry wide in the United States. The strongest selling points to date have been its lower capital cost and increased fiber yield. In addition, the Cradle Debarker has lower operating and maintenance costs than conventional drum debarkers because of its simple design and lower motor power requirements.

Dieter Bryce, Inc., commercialized the Cradle Debarker in 1996 in Tennga, GA. They installed a second debarker in 1998 in Hohenwald, TN. Both units can process 200 tons per hour and are still in operation.

The Inventions and Innovation Program works with inventors of energy-related technologies to establish technical performance and to conduct early development. Ideas that have significant energy-savings impact and market potential are chosen for financial assistance through a competitive solicitation process. Technical guidance and commercialization support are also extended to successful applicants.

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Order # I-FP-653
November 2002